

WHAT IS CLAIMED IS:

1. A fluid dynamic bearing motor comprising:
a base having a bore hole;
a liner secured within the bore hole;
a rotor assembly having a shaft partially disposed within the liner, the shaft configured to rotate relative to the liner; and
a fluid dynamic bearing disposed between the liner and shaft.
2. The fluid dynamic bearing motor of claim 1, wherein the liner includes a bottom having hole formed therethrough.
3. The fluid dynamic bearing motor of claim 2, wherein the base includes a recirculation channel extending along a wall of the bore hole and along a bottom of the bore hole.
4. The fluid dynamic bearing motor of claim 3, further comprising a capillary seal having a reservoir, the capillary seal defined between a wall of the liner and a tapered section of the shaft.
5. The fluid dynamic bearing motor of claim 4, wherein the fluid dynamic bearing is configured to pump bearing fluid through the hole in the bottom surface of the liner into the recirculation channel and through the recirculation channel into the reservoir.
6. The fluid dynamic bearing motor of claim 1, wherein the fluid dynamic bearing comprises a journal bearing and a thrust bearing.
7. The fluid dynamic bearing motor of claim 6, wherein the journal bearing is configured asymmetrically to pump bearing fluid towards a bottom of the liner.
8. The fluid dynamic bearing motor of claim 7, wherein the journal bearing includes at least two grooved bearing surfaces.

9. The fluid dynamic bearing motor of claim 1, wherein the base is at least one of forged, molded or casted.
10. The fluid dynamic bearing motor of claim 1, wherein the base is at least one of machined, casted, forged or molded.
11. The fluid dynamic bearing motor of claim 1, wherein the rotor assembly includes a cold-worked hub.
12. The fluid dynamic bearing motor of claim 11, wherein the cold-worked hub is at least one of drawn, hydroformed, spun, molded, casted, forged or stamped.
13. The fluid dynamic bearing motor of claim 11, wherein the cold-worked hub further includes:
 - a flange; and
 - a stepped cylindrical sidewall extending from the flange and circumscribing at least a portion of the base.
14. The fluid dynamic bearing motor of claim 11, further comprising a magnet attached to the cold-worked hub and a stator coupled to the base, the magnet and the stator being configured to generate a downward acting preloading force on the cold-worked hub.

15. A disc drive spindle motor for rotating at least one disc about a central axis in a data storage device, comprising:

- a base including a bore hole and a recirculation channel, the recirculation channel defined in part by a first groove extending along a wall of the bore hole and a second groove extending along a bottom of the bore hole and connecting to the first groove;
- a liner secured within the bore hole;
- a shaft partially disposed within the liner;
- a fluid dynamic bearing disposed between the liner and shaft;
- a capillary seal having a reservoir and defined between a wall of the liner and a tapered section of the shaft;
- a cold-worked hub coupled to the shaft; and
- a disc carrying member coupled to the hub.

16. The disc drive spindle motor of claim 15, wherein the fluid dynamic bearing is configured to pump bearing fluid through a hole in a bottom surface of the liner into the recirculation channel and through the recirculation channel into the reservoir.

17. The disc drive spindle motor of claim 15, wherein the fluid dynamic bearing comprises a journal bearing and a thrust bearing.

18. The disc drive spindle motor of claim 15, wherein the liner is at least one of stamped or drawn.

19. The disc drive spindle motor of claim 15, wherein the hub is least one of drawn, hydroformed, spun or stamped.

20. The disc drive spindle motor of claim 15, wherein the base is least one of molded, casted or forged.